SWPC_CAT CME analysis Procedure (online version of the tool)

* Identify the CME and the start time (first appearance), look at coronagraph images in motion.
* Look at EUV images in motion near the CME start time and identify the source location and any lower coronal signatures (post eruption arcade, dimming, rising loops, filament eruption).
* Launch SWPC_CAT_Web tool at https://ccmc.gsfc.nasa.gov/swpc_cat_web/
* Load the coronagraph images: select date in the upper right corner, and press "Load Images" button ➔ two (2) full days-worth of coronagraph difference images (starting with the selected date) is loaded into the top panel of the tool.
* Use the scroll bar below one of the coronagraph image windows to display one of the CME images in that window (you can then synchronize all three coronagraph images by clicking on the downward arrow button under the image displaying the CME).
* Adjust the images so you can see them well. Use "IMG-CONTROLS" panel (and select the satellite) to play with image saturation, etc. to get a clearer view of the CME.
* You can switch between the LASCO C3 and C2 images by clicking on the white bar below the SOHO image frame and selecting "SOHO LASCO C2 – Running Difference" (default is LASCO C3).
* Choose a time where you can see the CME well, but also be sure that the CME's width & location isn't varying too rapidly. You're trying to determine the values corresponding to 21.5 RSun (but keep in mind that the earlier images may correspond better with the EUV images).
* Use "CME-CONTROLS" panel to fit the yellow CME outline on the coronagraph images. Experiment with the parameters and do your best to fit all three (or two) viewpoints. Once you think you've got good parameters, go into an image pane and click "CME Matches Image."
* **Note: Once you've chosen Latitude/Longitude/Angular Width, you can't change them!** Choose wisely ☺
* For each image time, adjust the Radial Distance slider until you think it matches closely. Note that image times do not have to match! Adjust the distance for each image time and select "Match Image."
* Every time you click "CME Matches Image" you should see a small box appear on the "Velocity graph" plot (colors of boxes correspond to instruments). Clicking "Calculate" on the Results panel will draw a line fit to the data points and update the values in parameter boxes on Results panel
* Finally, examine your values – if the speed looks roughly constant (small boxes on the Velocity graph fit the line well), you can use the derived values. If it looks like the CME decelerating or accelerating, you may want to "Unmatch" some of the earlier images to make sure the velocity fit is only using the later images (closer to 21.5 RSun).
* The final step is doing a screenshot of the whole screen in case you need to reanalyze the CME again or if you are asked to share it with other forecasters (there is no “Save Session” option yet).